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10/673,188	09/30/2003	Hironobu Sai	033022-010	1256

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EXAMINER

ARMAND, MARC ANTHONY

ART UNIT	PAPER NUMBER
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2814

NOTIFICATION DATE	DELIVERY MODE
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12/15/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/673,188	Applicant(s) SAI ET AL.	
	Examiner MARC ARMAND	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3,4 and 10-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3,4 and 10-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 3-4 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6898215 to Naone et al. in view of US 6716378 to Yang et al. of record.

Regarding claims 13 and 3 Naone discloses a semiconductor light emitting device (LED) in fig. 1 and 7H-JA comprising: a mesa section (convex portion) having at least sandwich structure of an n-type clad layer 16, column 7 line 8, an active layer 18, column 5 line 46, and a p-type clad layer 20, column 5 line 47 and col. 6 line 43, which are constituted by compound semiconductor layers formed on a substrate 12, column 5 line 41; an insulating film 454, fig. 7G, of polyimide, column 13 lines 43-48, to cover the mesa section excluding a contact region 428, fig. 7H col. 13 line 51; and an insulating layer 464, col. 13 line 53, cover the insulating layer 454, fig. 7H.

But, Naone does not disclose the LED wherein the inorganic insulating film having a porous area defined by cylindrical vacancies, having vacancy rate of 50% or more while being oriented substantially in parallel with a surface of the substrate, and wherein the vacancies are arranged at periodic interval and wherein the cylindrical are formed such that the cylindrical vacancies of adjacent porous structures are oriented in different directions.

However, Yang discloses the inorganic insulating film having a porous area defined by cylindrical vacancies, having vacancy rate of 50% or more, col. 6 lines 32-35, while being oriented substantially in parallel with a surface of the substrate, col. 6 lines 30, and wherein the vacancies are arranged at periodic interval, fig. 2A-5C. At the time the invention was made; it would have been

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obvious to one of ordinary skill in the art to use the inorganic layer teaching of Yang to replace the insulating layer 464 in Naone's device, because such insulating material would have produced a low dielectric constant, low-cost, non-toxic, and biodegradable inorganic dielectric material as taught by Yang in column 2 lines 38-40.

The 'vacancy' is being interpreted as a 'porosity' or 'holes' structure.

Yang also discloses an inorganic insulating film comprises a plurality of the porous structures, wherein the cylindrical are formed such that the cylindrical vacancies of adjacent porous structures are oriented in different directions, fig. 2A-5C col. 3 lines 8-20. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the inorganic layer teaching of Yang to replace the insulating layer 464 in Naone's device, because such insulating material would have produced a low dielectric constant and low-cost inorganic dielectric material as taught by Yang in column 2 lines 38-40.

Regarding claims 4 and 10-12, Naone discloses the semiconductor light emitting device according to any of claims to 3, wherein the mesa section includes a surface emission structure having an electrode 428 in a top portion and comprises a semiconductor layer 20, provided with an active layer 18 having a quantum well structure, column 2 line 30, constituted by a compound semiconductor, and a pad 500, fig. 7J, to come in contact with the electrode 428 is provided on the insulating film 464.

With respect to “a sintered inorganic”, the process limitations “a sintered inorganic” do not carry weight in a claim drawn to structure. In re Thorpe, 277 USPQ 964 (Fed. Cir. 1985).

4. Claims 14,15 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6898215 to Naone et al. in view of US 6716378 to Yang et al., and further in view of Kaneko et al., (Kaneko) USPAT 7,187,702.

Regarding claims 14,15, Naone discloses a semiconductor light emitting device (LED) in fig. 1 and 7H-JA comprising: a mesa section (convex portion) having at least sandwich structure of an n-type clad layer 16, column 7 line 8, an active layer 18, column 5 line 46, and a p-type clad layer 20, column 5 line 47 and col. 6 line 43, which are constituted by compound semiconductor layers formed on a substrate 12, column 5 line 41; an insulating film 454, fig. 7G, of polyimide, column 13 lines 43-48, to cover the mesa section excluding a contact region 428, fig. 7H col. 13 line 51; and an insulating layer 464, col. 13 line 53, cover the insulating layer 454, fig. 7H.

But, Naone does not disclose the LED wherein the inorganic insulating film having a porous area defined by cylindrical vacancies, having vacancy rate of 50% or more while being oriented substantially in parallel with a surface of the substrate, and wherein the vacancies are arranged at periodic interval and wherein the cylindrical are formed such that the cylindrical vacancies of adjacent porous structures are oriented in different directions and a mesa section surrounded by a trench and the trench is filled with inorganic insulating film; an

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electrode formed into a ring shape having an opening in a center portion of the electrode.

However, Yang discloses the inorganic insulating film having a porous area defined by cylindrical vacancies, having vacancy rate of 50% or more, col. 6 lines 32-35, while being oriented substantially in parallel with a surface of the substrate, col. 6 lines 30, and wherein the vacancies are arranged at periodic interval, fig. 2A-5C. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the inorganic layer teaching of Yang to replace the insulating layer 464 in Naone's device, because such insulating material would have produced a low dielectric constant, low-cost, non-toxic, and biodegradable inorganic dielectric material as taught by Yang in column 2 lines 38-40.

The 'vacancy' is being interpreted as a 'porosity' or 'holes' structure.

Yang also discloses an inorganic insulating film comprises a plurality of the porous structures, wherein the cylindrical are formed such that the cylindrical vacancies of adjacent porous structures are oriented in different directions, fig. 2A-5C col. 3 lines 8-20. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the inorganic layer teaching of Yang to replace the insulating layer 464 in Naone's device, because such insulating material would have produced a low dielectric constant and low-cost inorganic dielectric material as taught by Yang in column 2 lines 38-40.

Kaneko shows in fig.1, a device having a mesa structure, and a mesa section surrounded by a trench (106) and the trench is filled insulating film ; an electrode (107) formed into a ring shape (fig.2) having an opening in a center portion of the electrode (107) (col.7,line 1-45).

Kaneko is evidence that ordinary workers skilled in the art would find reasons, suggestions or motivations to modify the device of Naone. Therefore, at the time the invention was made; it would have been obvious to have a device having a mesa section surrounded by a trench and the trench is filled insulating film ; an electrode formed into a ring shape having an opening in a center portion of the electrode because it will provide a device with a good reliability where the desired form and size can be chosen (col.4,line 40-45).

Response to Arguments

5. Applicant's arguments with respect to claims 3,4,10-15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARC ARMAND whose telephone number is (571)272-9751. The examiner can normally be reached on 9-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/MARC ARMAND/
Examiner, Art Unit 2814

/Wai-Sing Louie/
Primary Examiner, Art Unit 2814

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